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omy. True, Jordanians have frequently complained of Syrian government regulations which, in an effort to support the Hedjaz Railway, have prohibited transit traffic by truck of most goods. While some categories of goods, notably perishables and petroleum products, are exempt from this prohibition, there is little doubt that more traffic would move by road if the prohibition were entirely lifted. At the same time, Jordan may be able to import and export some bulky commodities more advantageously by rail; Jordan's own port an the Gulf of Akaba has no rail connection and is by no means as advantageously situated with respect to trade with Europe as Beirut. In the circumstances, we would suggest that the subject of transit and the relationship of the rail lines thereto be fully and frankly discussed by representatives of the Jordanian, Syrian and Lebanese governments. Their common interest in the maintenance of the railway lines and the possibilities of more efficient and economical operation can then be thoroughly examined. It may be feasible to reduce operating costs by agreed economies and to raise revenues through certain selective increases in freight rates. In some respects, for instance, freight rates on the Hedjaz Railway seem to be lower than those on the DHP line. In the long run it appears unwise to make shippers support the railway by insisting that they use it for transport of certain commodities. If the railway must be maintained owing to considerations which are partly non-economic, it would be better to have the governments concerned share the entire deficit resulting from its continued operation.

Road Transport[28]

With traffic on the railways no greater than prewar, it is apparent that motor transport has captured all of the substantial increase in the amount of goods produced and traded in the Syrian economy over the last decade and a half. The Syrian road network increased from 4,500 kilometers in 1939 to 8,200 in 1952, and the length of hard-surface (macadam and asphalt) from 1,500 to 3,800 kilometers. This includes only so-called "all-weather" roads; with the addition of those not traversable in the wet season the total length is over 10,000 kilometers. The number of motor vehicles of all kinds on the roads rose from 3,736 in 1939 to 13,146 in 1953; the number of trucks increased from 873 to 4,742 and of buses from 348 to 1,212. In part the rapid growth of road transport was caused by the lack of adequate

[28] See Annex H, p. 436.

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494 rail facilities on the principal routes along which commodities had to be moved in growing volume, such as from the Jezireh to Aleppo and Latakia. Unquestionably, also, transport over poor roads has been costly, entailing heavy depreciation and not infrequent interruptions of traffic.

II PRINCIPAL TRANSPORT ROUTES

487 489 For an understanding of the transport problems confronting Syria it is also necessary to outline the principal routes over which traffic must move. One of the main transport lines is the north-south axis connecting Damascus with Homs, Hama and Aleppo to the north and with the Hauran, Djebel Druze and Jordan to the south. Crossing this axis in a west-easterly direction are three principal communication lines running from the three ports serving Syria—Beirut and Tripoli in Lebanon and Latakia in north-western Syria. Of these three ports Tripoli is by far the least important, serving only the region immediately around Homs. Beirut is still an important port of entry for Syrian imports, although the volume handled by Latakia has been rising steadily. Through Latakia, however, goes the bulk of Syria's exports.

The west-east communications lines continue in a generally easterly direction after crossing the north-south axis at Aleppo, Homs and Damascus. Those continuing east of Aleppo and serving the Jezireh and the narrow but fertile irrigated lands of the Euphrates are by far the most important. On the other hand, the road or track running east from Homs through the Syrian desert is of little importance except for serving and patrolling the pipelines conveying oil from Iraq to the port of Banias in Syria and to Tripoli. Of somewhat greater significance is the trans-desert route from Damascus to Baghdad. Although for the most part only a track, it provides an all-weather route over which traffic can move between Lebanon and Syria on the one hand and Iraq and even Iran and Kuwait on the other hand. Over this route the well-known Nairo Transport Company carries on an active international passenger traffic with modern buses and a number of trucking concerns haul high cost products such as fruits and vegetables, machinery and rugs. No special urgency attaches to the improvement of the two routes running eastward from Homs and Damascus, however, and no further consideration will be given to them in this report.

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latter amount, supplemented by increasing allowances for maintenance of the new roads recommended, should basically be adequate for the future as well. Poor organization, inadequate supervision and dispersal of effort seem to have been responsible for the past unsatisfactory results. Maintenance work is not the responsibility of the Director of Transport, but falls under that of the Secretary-General of the Ministry of Public Works, who is too preoccupied to give it adequate attention. Supervision in the field is inadequate, partly because of insufficient engineers and partly because engineers are reluctant to leave their desks. Maintenance crews are too small and their work is seldom concentrated in such a way as to effect visible improvement. This aspect of road work certainly demands the urgent attention of the Syrian government, which might well seek foreign technical advice on better organization of maintenance. We urge the establishment of a special highway department in the Ministry of Public Works to look after both maintenance and new construction.

Some increase in the availability of maintenance machinery appears desirable. The machinery park now includes 59 rollers, 62 boilers and 24 mixers, but no graders or bulldozers. Many of the rollers are old and some are defective and too light. The mission has accordingly allowed £S 1 million for new machinery in its recommended program.

Regulation of Road Traffic

Better regulation of road traffic is another requirement for the improvement of motor transport. A comprehensive road code exists, but there is virtually no policing to enforce it. Reckless driving is a common occurrence, and the accident rate appears to be excessive although no record is kept. Above all, chronic overloading of trucks wreaks havoc with road surfaces. As a minimum it is desirable to install a few weighing stations at key traffic centers to enforce loading regulations. Another cause for concern is the restrictive policy, originating with the French mandatory regime, which the government pursues in licensing common carrier trucks. Basically this policy provides that no new truck (other than tank trucks) will be licensed unless an old one is retired. Truck licenses, which are negotiable, therefore sell at a premium of £S 10,000 and more, and the number of commercial or common carrier trucks has tended to remain stationary while the number of private trucks has greatly increased. While the tendency toward even larger trucks has undoubtedly increased over-all

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capacity significantly, the restrictive policy may have contributed to higher trucking charges. Recently there has been some relaxation of the restrictions. The mission concedes that in principle it might be desirable to regulate the number of trucks in order to prevent excessive investment in road transport. The government, however, has little knowledge about the adequacy of the number of trucks to guide it in applying such a regulation, and it would be better to achieve the objective indirectly by charging a high fee for new truck licenses, as is done in the case of tank trucks.

III PORTS

One of the most important transport projects undertaken by the Syrian government in recent years is the construction of the port of Latakia. This is Syria's only real port other than Banias, which handles just the oil coming in over the pipeline from the oilfields in northern Iraq. The decision to create a port at Latakia was formally taken early in 1950 when a company, capitalized at £S 24 million, was formed to establish and operate the port. Nearly all of the capital has been furnished by the government; private capital has subscribed only 10% despite a government guarantee of a 5% dividend.

Natural conditions at Latakia, as indeed along most of the eastern Mediterranean coast, are not particularly favorable to a port. There is no natural harbor and heavy winds from January to March impede port operations. For this reason, the principal feature of the port program is the construction of a breakwater and the deepening of the basin behind it. Other features call for the construction of quays and warehouses with a capacity of 15,000 cubic meters and the installation of cargo-handling equipment. Work on the breakwater and quays is proceeding and plans for the equipment of the port are being perfected. The breakwater and quays should be finished in 1956 and the remainder of the work in the following year. To complete these plans will probably entail a further outlay of £S 38 million over the coming years. Plans at this stage do not provide for the building of a grain silo. The mission's sole recommendation is that this omission be remedied, since in our opinion the installation of mechanized grain handling equipment is imperative in a port where the bulk of the traffic consists of cereals.

Meanwhile, as previously indicated, the volume of cargo handled by

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on Ports in this Annex) are no less essential to a solution of the east-west transportation problem than they are to improvement of the farmer's marketing position.

Comparative Cost of Rail and Road Transport

In the specific case of transport across northern Syria, we have tried to determine the comparative cost to the economy of road and rail transport in terms of depreciation of the capital investment, maintenance, fuel and supplies. Depreciation on railway rolling stock has been figured on the basis of 30 years' life, on motor vehicles on the basis of 7 years' life. No allowance has been made for depreciation of the investment in permanent way for the projected railway because the life of the rail roadway may be considered virtually indefinite with normal maintenance and renewals. (The latter are included under "Maintenance" in Table 5.) We have assumed, however, that with the development of heavier and speedier motor vehicles, a highway would be obsolescent within 30 years and require complete reconstruction. As already indicated in the mission's Main Report, we have assumed a freight movement of about 700,000 tons from Jezireh to Aleppo, of 150,000 tons from Aleppo to Jezireh, of 500,000 tons from Aleppo to Latakia and of 250,000 tons from Latakia to Aleppo. Of this total traffic of somewhat over 400 million ton-kilometers annually, a new railway might be expected to carry about two-thirds. The comparative investment would be about £S 170 million, including £S 24 million for rolling stock, for a railway and perhaps £S 97 million, including £S 40 million for some 800 12.5-ton trucks, for road transport.

Table 5 shows the results of our calculations. They leave no doubt that rail transport would be much more economical than road transport. The estimates are, of course, subject to a margin of error; and the annual savings in costs might best be stated within a range of £S 15 to £S 20 million.

The real question, however, is whether this saving, which is equivalent to an increase in real national income, is sufficient to justify the additional capital investment required by a railway. We have previously estimated this difference in capital cost at £S 73 million. The actual difference, however, is likely to be greater. Even if a railway were built, it would still be necessary to undertake some investment in roads, not only for the construction of feeder roads for the railway, but also for the improvement of existing main routes. The alternative is not rail investment or road invest-

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ment but investment in a railway plus some roads or an investment in roads alone. On this basis the first alternative is likely to require a capital outlay of around £S 100 million more than the second.

An amount of £S 100 million could only be found at the expense of other development projects, and probably, in particular, at the expense of irrigation projects which also require much capital. In our opinion, an equivalent investment in irrigation works is likely to contribute almost

TABLE 5 Annual Cost to the Economy of Rail and Road Transport

(*Thousand £S*)

	Rail	Road
Depreciation		
Roadway	—	1,900
Rolling stock or vehicles	800	5,714
Maintenance		
Rolling stock or vehicles	1,484	8,200[b]
Roadway	2,380[c]	700[c]
Fuel and oil	600	5,590[d]
Total	5,264	22,104

[a] Including renewals.
[b] Calculated at 17 piasters per vehicle-kilometer.
[c] Calculated at £S 1,000 per kilometer.
[d] Calculated at 18 piasters per vehicle-kilometer.

£S 30 million to national income. Moreover, the increase in primary output as the result of this investment would also bring about an expansion of income in the commercial and transport sectors of the economy which might well be between £S 10 and £S 15 million. Thus the total direct and indirect contribution to national income might reach £S 40 to £S 45 million. It seems to us therefore that the capital investment required for a railway would yield much higher returns to the economy if it were employed for irrigation. In other words, the mission could have found place for a railway in the development program it has recommended only by eliminating a substantial part of the proposed outlays on irrigation and reclamation. A program so altered would have made a smaller total contribution to the economy and was rejected for that reason.

There is still another, though secondary, reason for preferring a road

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program to a rail program as a solution of the Jezireh's transport problem. In the case of a railway all the investment funds would have to be furnished by the government, for private capital in such magnitude will simply not be available. On the other hand, private investment is and will be available for truck transport, so that government investment can be confined to road construction. In a country where it is difficult to transfer private savings to public hands this is an important consideration.

The mission has noted a report that a foreign firm would be willing to build a railway on the basis of payments spread over a period of 10 years following completion of construction. It should be pointed out, however, that the contraction of a foreign debt for this purpose might well impair Syria's capacity to borrow for other projects. The mission's proposed development program has already assumed a certain amount of external borrowing. Thus the contraction of foreign credits for railway construction is unlikely to provide Syria with more resources for financing a development program than we have envisaged.

It is sometimes argued that the operation of a railway would require fewer imports on a continuing basis than road transport, and that this would be advantageous for Syria's balance of payments and would also make transport less subject to interruption of foreign supplies in the event of war. There is no doubt that fewer imports would be required for rail transport. However, the savings in foreign exchange thus achieved would be smaller than the foreign exchange earned by the agricultural commodities that could be produced on land which could be irrigated if the additional capital required for a railway were devoted to irrigation projects. Moreover, the fact that a railway would be relatively less dependent on foreign supplies would be an advantage in time of war only if Syria itself were not involved in hostilities; if the war extended to Syrian territory, railway transport would be more susceptible to interruption by bombing than road transport.

II ROAD TRANSPORT

A ROAD SYSTEM AND TRAFFIC DEMANDS

Distribution of Syrian roads by use and type, in 1953, was as shown in Table 6.

The number of motor vehicles in the country has grown about 3½

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TABLE 6 Syrian All-Weather Roads, 1953

(*Kilometers*)

Type	Asphalted	Metalled	Earthen	Total
International and main highways	1,700	290	1,010	3,000
Others of economic importance	600	640	1,000	2,240
Local roads	300	270	2,390	2,960
Total	2,600	1,200	4,400	8,200

times since just before the war, and has nearly doubled since 1948 (see Table 7). Of special significance are trucks and buses, which not only have become more numerous but are constantly increasing in individual size and weight.

TABLE 7 Motor Vehicles in Circulation, 1937–53

Type	1937	1948	1951	1952	1953	1953 as % of 1937
Trucks	873	3,443	4,557	4,594	4,742	544
Buses	348	1,081	1,126	1,129	1,212	348
Passenger cars	2,515	3,101	5,444	6,065	7,192	285
Total	3,736	7,625	11,127	11,788	13,146	352

Of the 4,742 trucks registered in 1953, 158 were tankers and 623 were diesels. No statistics are available on sizes, but most of the newly imported ones are from 7 to 12 tons capacity. The aggregate capacity of trucks on the road is probably in excess of 33,000 tons. These figures do not indicate the true tonnage in circulation; a census during the month of August 1953 showed only about 30% of the 24,137 motor vehicles passing the frontier between Beirut and Damascus to be of Syrian registration.

Data of this kind, if carefully and systematically collected, can be a most useful guide in determining where road improvement funds should be invested for greatest public benefit. Only a few local traffic census figures were available to the mission, and while they appear to contain a number of serious discrepancies, they do indicate the order of magnitude

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of the traffic load on various routes at certain times of the year. As an aid to sound future development, it will be to the advantage of the Syrian government to place the collection of traffic statistics on an organized scientific basis as soon as possible.

B ROAD CONSTRUCTION

Most of the main surfaced roads in western Syria are of 5.5-meter width; in the east the five-meter type is more common. Neither is sufficient for safety under present or anticipated traffic conditions. More satisfactory specifications for general use would call for not less than six meters of finished surface and a firm shoulder of 1-1.5 meters on each side. The mission strongly recommends that hereafter this basic design be used for all new construction, repair or reconstruction of major roads.

A number of road surface materials and methods have been used or considered. The most common construction is of waterbound macadam, both with and without an asphalt covering.

Except for such purposes as the construction of "Irish bridges",[3] concrete is seldom used as a road surface in Syria, cement being considered too expensive. The local delivered price was said to be £S 90 per ton in 1953, although the mission was informed that in 1954 cement could be obtained for £S 80 per ton.

The cement industry is protected by the government and enjoys substantial profit margins. Moreover, the prices quoted include excise taxes of £S 15 per ton, from which public bodies might reasonably be exempt. But the basis of present prices Syria can hardly afford to make greater use of this superior roadbuilding material in meeting the specifications required for the growing commercial trucking.

Recently the possibility of constructing low-cost mix-in-place bituminous roads, with or without soil stabilization, has attracted much attention. The method has been used successfully in several countries of the Middle East, but to date it has not been tried in Syria, partly because the local asphalts of Kfarie and Djebel Bichri have not proven adaptable to the process but also because of some doubt that roads so constructed can withstand heavy truck traffic.

[3] Actually not a bridge but a type of ford, useful where traffic density is moderate and the small or infrequent water flow does not justify a real bridge. The road dips down to streambed level and is strongly paved with reinforced concrete, providing a firm crossing even when inundated.

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491 653 districts without the resources necessary for the most ordinary upkeep. A wider use of road gangs would achieve far better maintenance, for the same expenditure, than is possible with the prevailing "one-man" system. A team concentrating upon a section at a time can often effect repairs which one man alone cannot do at all; gangs also permit closer technical supervision and more efficient use of equipment—valuable considerations when the supply of both is limited.

Road Maintenance Equipment

491 406 The country as a whole has far too little road-building and maintenance machinery for effective work. Mechanization must of course be introduced gradually where so much of the work is now done by hand. The present stock of equipment cannot meet even current needs. Half the mixers in the Damascus area are unusable, for example. There are no graders or bulldozers for maintenance purposes, although at least ten are needed for the tracks alone.

It is not enough to expect that construction machinery will be assigned to maintenance afterward; much of it will be worn out on the contemplated road-building program. Maintenance machinery should be bought separately. For one or more stone-crushing plants, the necessary bulldozers and graders, new rollers and other equipment needed currently, the mission foresees an expenditure of £S 1 million in the first five-year period and twice this amount in the second five years.

494 D LEGISLATION ON THE USE OF ROADS

Traffic Laws

Syria enacted a modern, comprehensive traffic code in 1953, which contains the usual detailed regulations on vehicle dimensions, maximum wheel loading, weight limits for certain types of roads and bridges, and similiar provisions for protection of the roads. It also provides for periodic inspection of vehicles for mechanical fitness. Rules of the road for safe and courteous driving are prescribed, as well as the knowledge required for obtaining a driver's permit.

The code is essentially a good one, and it is regrettable that most of its provisions are ineffective because of poor enforcement. Apart from the danger to human life, unless better measures are taken to enforce the

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regulations Syria faces a heavy loss of investment in road construction and maintenance. Besides establishment of a number of portable weighing stations, penalties should be imposed against unnecessary driving on the side of the road, which damages the edges, shoulders and adjacent crop land. Farmers should be severely penalized for plowing on the road right-of-way. Heavy traffic should be barred from certain roads and tracks during and just after heavy rains when the ground is soft.

Public Transport

Motor vehicles rendering services for public hire, buses, taxis and certain trucks, are subject to special regulation.

Until 1953, the individual bus owner could operate when, where and under such conditions as he wished. The new law[9] limits his operations to a duly franchised route and permits the government to control the number of buses on a given route, with the aim of preventing uneconomic congestion on popular routes and shortage on others. New bus owners are entitled to be licensed for those routes whose quota is not filled. In this respect the law presupposes a better statistical knowledge of the traffic demand than the government has. There are other valuable provisions, however, and already the legislation has introduced greater cleanliness, uniform rates, and responsibility of the carrier for liability insurance.

Trucks owned and operated by merchants, industrial concerns, farmers and others for the hauling of their own goods are classified as private vehicles. The number of these is not restricted and is increasing rapidly. There were 1,820 licensed private trucks in 1953, compared with 1,556 the year before and only 667 in 1948.

Special regulation of public trucks (those licensed to engage in the public transport business for hire) was introduced during the French mandate to protect the railways from excessive competition. The number of public trucks was limited and, in 1935, the sacrifice of two or more trucks was required as a condition for obtaining a license for a new one. Elsewhere we have mentioned more recent provisions for protection of the railway which prohibit carriage by road of certain classes of goods.

The principle of restricting the total number of public trucks has persisted, although the outmoded original justification has been replaced. The present purpose is to prevent excessive competition among the truckers

[9] Legislative Decree No. 122, October 5, 1953.

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themselves. Possibly it may be helpful to regulate the number of trucks in this way, if only to avoid an overinvestment in them by the public. The matter is debatable. There is at least a basic conflict of purpose if on the one hand the government seeks to lower existing highway freight rates, and on the other restricts competition specifically to prevent them from falling. Again, for the government to adjust the supply of trucks nicely to the demand requires statistical data which is certainly not now available.

The system is open to abuse, whether or not it occurs. In any event the cost of licensing a new truck is greatly increased, for the owner must first purchase from another the license of an old truck to be decommissioned. For this freely negotiable right he may have to pay £S 10,000 or more—a price which in itself suggests that rigid restriction is not entirely in the best public interest.

Since 1953 these restrictions have not applied to tank trucks, any number of which may be licensed upon payment of a fee of £S 1,500 per vehicle. The mission suggests that a similar arrangement for other types of trucks would have a restraining influence, while at the same time adding appreciably to government revenues.

International Truck Transport

Reference has been made to the added costs of transport of Syrian goods, particularly on certain seaward routes,[10] occasioned by one or more border crossings.

This problem cannot be viewed as a difficulty unique to Syria, but must be recognized as an inconvenience which raises transport costs for each of the several countries of the region. One study in 1952 reported that it took a truckload of merchandise seven days to travel the 975 kilometers from Beirut to Teheran. The trip was found to involve six sets of customs formalities and documents, loading and reloading the goods onto four different trucks, and four successive drivers—a Lebanese, a Syrian, an Iraqi and an Iranian. Under these circumstances freight rates are unavoidably high, in addition to the breakage and loss occasioned by repeated handling.

Such a self-imposed handicap can be removed only by supplanting the present narrow protective regulations of the individual countries by reciprocal concessions for mutual economic advantage.

[10] For example, from Damascus to Beirut or from Homs to Tripoli.

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into Jordan. There is a branch line from Deraa to Suwaida, but another branch, to Haifa, is out of use.

Damas-Hama et Prolongements. (*a*) From Beirut to Damascus there is a narrow-gauge track running for 91 miles via Rayaq; rack and pinion are used to traverse the mountains, and this slow haul is now employed for freight only. (*b*) From Rayaq to Aleppo there is a 4 ft 8 in. gauge track for 270 miles which passes through Homs and Hama. (*c*) The stretch of the Cairo–Turkey line from Ras an-Naqura on the Lebano–Israel border to Beirut is out of commission but the section of 64 miles in standard gauge from Beirut to Tripoli and Homs is used.

Syrian state Railways. This is the part (164 miles) of the Turkey–Mosul line that runs inside Syrian territory.

Roads

Main arterial roads in Lebanon are considered adequate, but the network of secondary and feeder roads is poor. In Syria the road system is generally inadequate, and only the asphalted roads are usable for heavy traffic throughout the year. The following figures give some indication of the position:

Syria, 1951	Miles	Lebanon, 1949	Miles
1st class, asphalted	2,917	Surfaced	1,811
2nd class, macadamized	1,968	Unimproved	414
Tracks	5,218		

(Sources: *Statesman's Year-Book, 1953*; US Dept. of Commerce.)

There are over 11,000 vehicles registered in Syria. Trans-desert passenger and goods services to Iraq are in regular use and goods are also moved, including refrigerated vegetables, to Kuwait and Dahran. The authorities are restricting the registration of new lorries to the estimated needs of the countries, but more vehicles are required, particularly diesel lorries for long hauls of heavy loads.

Aerodromes. The new airport of Beirut (Khaldeh) receives the Comet, and is beginning to rival Cairo as a gateway to the East, and that of Damascus (Mezzeh) has long been in use by Constellations. Many international airlines stage at Khaldeh or Mezzeh; the approach to Khaldeh is better and, with between twenty and thirty aircraft a day, it has since 1951 outstripped Mezzeh, which has five to ten aircraft a day. For some years plans have been under consideration for moving the Damascus airport to the east of the city. There are two private Lebanese airlines. A national airline in Syria was a financial failure and was taken over by the army. Smaller airfields exist near Tripoli,